# GOVERNMENT OF INDIA
# SCIENCE AND TECHNOLOGY
# LOK SABHA

STARRED QUESTION NO:351
ANSWERED ON:23.12.2015
Soft Loan for Research and Development
Kumar Dr. Virendra

**Will the Minister of SCIENCE AND TECHNOLOGY be pleased to state:**

(a) whether the Council of Scientific and Industrial Research is providing soft loan for research and development under various schemes;
(b) if so, the details of various schemes in this regard; and
(c) the year-wise amount of loan provided during each of the last three years and the current year, scheme-wise and state-wise?

## Answer

MINISTER OF SCIENCE AND TECHNOLOGY AND EARTH SCIENCES

(Dr. Harsh Vardhan)

(a),(b)&(c): A Statement is laid on the Table of the House.

THE REPLY IN PURSUANCE OF THE STATEMENT MADE IN ANSWER TO THE LOK SABHA STARRED QUESTION NO. *351 BY THE HON'BLE MINISTEROF SCIENCE & TECHNOLOGY AND EARTH SCIENCES.

Part wise reply:

(a) & (b) Yes, Madam. The Council of Scientific & Industrial Research (CSIR) is providing soft loan to companies through a scheme entitled New Millennium Indian Technology Leadership Initiative (CSIR-NMITLI). Under the scheme, the R&D activities are supported in project mode. In a given project, the funding to a company is through soft loan and the funding to a publicly funded institution (National Laboratory/R&D Institution) is in the form of grant-in-aid. The project partners (Industry and National Laboratory/R&D Institution) work together synergistically, bringing in their complementary strengths to achieve the R&D objectives identified for a designated project. The project is monitored rigorously by the peers of the R&D domain. The knowledgebase (technologies/products/processes) developed through a project is commercialized by the partner company. The loan provided to the company carries a simple interest of 3% per annum. The loan provided has to be returned in 10 installments.

The CSIR-NMITLI has helped Indian Industry in developing R&D capability and capacity in select technological areas in partnership with National Laboratories/R&D institutions. The R&D activities carried out under CSIR-NMITLI have led to development of several technologies/products /processes.

The gamut of R&D efforts under CSIR-NMITLI has been impressive. It included: cancer genomics and proteomics; 5 & 25 KW decentralized power packs; functional genomics in tea, mentha, ashwagandha, plants; meso-scale modeling for monsoon predictions; versatile, portable PC based software for bioinformatics; biotechnology for replacing chemical process in leather sector; novel biotech therapeutic molecule −Lysostaphin; environmentally secure rare earth based colorants for surface coatings; novel molecular diagnostics for eye diseases; recombinant approach to produce ?-linolenic acid and Docosahexanoic Acid (DHA) in sunflower and yeast; a PC based high-end 3D visualization platform for computational biology; genetic improvement of Ashwagandha; fuel cells based on hydrogen; polymer electrolyte fuel cell stacks for stationary applications; genetic improvement of Jatropha curcas; tea polyphenols and their condensed products; integrated MicroPCR system with in-situ identification; B-Type Natriuretic Peptide (BNP) for diagnosis and treatment of congestive heart failure; distributed video surveillance system; vaccine for Johne's disease; "Vennfer" − unique H.264 high definition software based multiparty, multipoint video conferencing solution on multipoint network transmission protocol; next generation electric car; all-Fibre Supercontinuum Light Source with application demonstration on spectroscopic signature detection; nonclonable ID technology to establish authenticity of medical products; Diagnostic system for affordable, point of need testing to manage HIV and TB; System based computational model of skin; SoleckshawLite - an Innovative electrical green transport platform; and confocal microscope.

Vaccine for Johne's Disease: Two formulations of vaccine against Johne's Disease (occurring in goat, sheep, cow and buffalo) - JD Oil and JD Gel which can be used as prophylactic as well as therapeutic have been developed and approved for manufacturing by Drugs Controller General of India. Developed vaccine helps in saving economic losses due to disease which affects the health of the animals. The diseased animals give much less milk and loose weight significantly that leads to reduced meat production. Currently, there is only one approved vaccine for JD in the United States, Mycopar. It is a whole-cell bacteria consisting of inactivated Mycobacterium avium subsp. paratuberculosis (also known as MAP) mixed with an oil adjuvant. GUDAIRâ„¢ vaccine is available for control of ovine paratuberculosis in Australia. In UK, Vaccination has been used as an aid in the control of Johne"s through imported vaccine under license. Due to difference in prevailing strain of MAP in India, imported vaccines are not effective. Thus, India has developed its own vaccine through CSIR-NMITLI R&D effort. With this development, India has become part of elite group of countries who have technological capability to manufacture JD vaccine. This is a major contribution for economic growth of rural India

particularly the farmers engaged in rearing of animals.

MicroPCR: A battery operated hand held MicroPCR for diagnosis of various diseases has been developed and commercialized. The diseases which can be diagnosed are: Tuberculosis, Malaria, Dengue, Chikungunya, Hepatitis B and H1N1. This product has been patented in over 100 countries. Companies like Cepheid, Alere, Epistem have products in the point-of-care molecular diagnostics space. Currently, Cepheid's Xpert MTB/RIF assay has seen wide scale implementation in the Africa and parts of Asia after the WHO endorsed its use for detection of TB and drug resistance. Cepheid's test platform is priced at about USD 17,000 and its test consumable is priced at USD 40 per test. Through subsidies of USD 40 million from the Bill & Melinda Gates Foundation, PEPFAR, USAID, and UNITAID; Cepheid's per test price is now USD 10. The MicroPCR developed through the CSIR-NMITLI R&D costs USD 6000 only and the test price is just USD 12. This is a major contribution towards affordable healthcare. With the patent in over 100 countries, MicroPCR is slated for global competition.

Intelligent Video Surveillance Server (IVSS) system: Through CSIR-NMITLI, a complete Intelligent Video Surveillance Server (IVSS) system has been developed. The system has open architecture supporting a combination of analog, IP and wireless camera and the solution can be licensed independently or in combination with Original Equipment Manufacturers (OEMs) and system integrators. Developed ONVIF 1.02 (Open Network Video Interface Forum) standards compliant software stack for both the camera and management server has been licensed to international customers. The company, MindTree has been able to establish the Surveillance Manager (MindTree Product) brand in the market to a reasonable extent and several System Integrators are installing its solution in India. MindTree has established its name as a leading provider of white labeled Video Surveillance products designed for the Indian Market. MindTree has established presence in the ONVIF International standards forum.

Broadband Supercontinuum Light Source: The Supercontinuum Light Source using the Nonlinear Photonic Crystal Fiber (NPCF - developed by CSIR) is developed through CSIR-NMITLI. This is affordable technology and is creating for the country global niches. The product has multiple applications in the field of high density medical imaging and bio-photonics, and different spectroscopic applications where broadband coherent light sources are used for spectral illumination selectively. Each component of the broadband source behaves as laser light. The product is globally competitive and is available at Rs. 16 to 18 Lakhs per unit which is 30 % less than the internationally available products. The target users are the research laboratories, medical practitioners, strategic laboratories and pharmaceutical industries.

Confocal Microscope: This product is the world's first vertically integrated reflective type confocal microscope developed under CSIR-NMITLI. It has a broad band spectrum of operation (450nm to 2400nm). It uses Broadband Supercontinuum Light Source. Only two companies worldwide are having the Broadband Confocal Microscope with discrete laser light sources. Time resolve and fluorescence spectroscopy could be possible through this microscope that is extremely important for medical research. A large spectrum of samples could be tested by using one such confocal microscope. The cost for imported one is around Rs.4 crores, whereas the new product would sell for around Rs.1.25 crores.

Diagnostics for eye diseases: Under CSIR-NMITLI novel molecular diagnostics for eye diseases has been developed. The test System is named as Syndrome Evaluation System (SES). The SES simultaneously detects in one sample and one single test all the 15 pathogens that are known to cause dangerous eye infections. Most commonly used methods are based on microbial culture and smears. However, culturing takes long time. Beyond the very critical time after 72 hours by which time more than 60% patients lose vision. Thus, this development is boon for eye patients.

Dental implant: An indigenous dental implant has been designed and developed on the basis of scientific rationale and experimentally optimized to serve the treatment needs of an edentulous or partially edentulous Indian patient. The same is under clinical trials.
Green leather processing: Intervening in leather processing, CSIR-NMITLI has brought out a paradigm shift in leather manufacturing through bio-processing as opposed to the currently used chemical processes.

NonClonableID technology for medical products: A novel nonClonableID technology to address the unmet needs in medical product authentication and patient safety has been developed. The technology is for establishing product accountability through secured traceability from the point of origin to the point of dispensation, authenticity check and establishing e-pedigree. Tangible benefits of the technology in improving patient compliance to medications have also been demonstrated.

Fuel Cells: Hydrogen provides an attractive method for generating clean energy with significant impact on the energy security of India. Recognizing the importance of decentralized Power Generation Systems for dispersed habitation in the country, CSIR-NMITLI has developed and demonstrated 3.0 kW PEFC System along with an industrial partner. The proposed system is expected to replace the DG Set used for telecom towers in India.

(c) The total amount of soft loan provided year-wise to companies, during each of the last three years and the current year under NMITLI Scheme is given in the table. CSIR-NMITLI does not provide the soft loan to States.

Table: Total year-wise soft loan provided to companies

| Financial Year | Amount (Rs. in Crore) |
|---|---|
| 2012-13 | 20.0957 |
| 2013-14 | 15.4823 |
| 2014-15 | 12.9729 |
| 2015-16 (Till date) | 5.4167 |

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